

[What is claimed is]

1. A method of producing hydrogen gas comprising the steps of:

causing friction and mechanical fracture accompanying the friction to occur to a metallic material under water; and

increasing thereby chemical reactivity of atoms of the metallic material, in close proximity of the surface thereof; wherein water molecules are decomposed by accelerating corrosion reaction of water with the metallic material.

2. A method of producing hydrogen gas as claimed in claim 1, wherein formation of cracks and fracture inside the metallic material is continued due to expansion in volume, attributable to reaction products formed by the corrosive reaction to thereby cause self-propagation of the cracks to occur, causing evolution of hydrogen gas to autonomously continue.

3. A method of producing hydrogen gas as claimed in claim 1, wherein the metallic material is an aluminum or aluminum alloy material as industrial waste including refuse and cutting chips (curls) of an industrial aluminum material.

4. A method of producing hydrogen gas as claimed in claim 2, wherein the metallic material is an aluminum or aluminum alloy material as industrial waste including refuse and cutting chips (curls) of an industrial aluminum material.

5. A method of producing hydrogen gas as claimed in claim 1, wherein the water is pure water not substantially containing ionic impurities and organic molecules, and having an insulation resistance value not lower than 10 MΩ.

6. A method of producing hydrogen gas as claimed in claim 2, wherein the water is pure water not substantially containing ionic

impurities and organic molecules, and having an insulation resistance value not lower than 10 MΩ.

7. A method of producing hydrogen gas as claimed in claim 3, wherein the water is pure water not substantially containing ionic impurities and organic molecules, having an insulation resistance value not lower than 10 MΩ.

8. A method of producing hydrogen gas as claimed in claim 4, wherein the water is pure water not substantially containing ionic impurities and organic molecules, and having an insulation resistance value not lower than 10 MΩ.